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# Two New Species of *Bauhinia* (Fabaceae, Caesalpinioideae, Cercideae) from Southeastern Mexico and Mesoamerica

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**ABSTRACT.** Two new species of *Bauhinia* L. (Fabaceae, Caesalpinioideae, Cercideae) are described and illustrated: *B. miriamae* R. Torres endemic to Oaxaca, and *B. wunderlinii* R. Torres from México, Belize, and Honduras. Similarities to and differences from *B. divaricata* L. are discussed for both species; all three belong to section *Bauhinia*. With these novelties, *Bauhinia* sect. *Bauhinia* comprises approximately 20 species and is most diverse in Mexico, where there are 19 native and 14 endemic species.

**RESUMEN.** Se describen e ilustran dos especies de *Bauhinia* (Fabaceae, Caesalpinioideae, Cercideae): *B. miriamae* R. Torres endémica de Oaxaca y *B. wunderlinii* R. Torres de México, Belice y Honduras. Se discuten similitudes y diferencias morfológicas de ambas especies con *B. divaricata* L., considerando a las tres en la sección *Bauhinia*. Con estas novedades, *Bauhinia* sect. *Bauhinia* contiene aproximadamente 20 especies, siendo México un centro de diversidad importante para este grupo con 19 especies nativas, de las cuales 14 son endémicas a este país.

**Key words:** *Bauhinia*, Fabaceae, Mesoamerica, Mexico, section *Bauhinia*.

During the taxonomic revision of *Bauhinia* L. (Fabaceae, Caesalpinioideae, Cercideae) for Mesoamerica (Torres, 1999), three new species were discerned, one of *Bauhinia* sect. *Amaria* (S. Mutis ex Caldas) Endlicher (Torres, 2001) and two here described of section *Bauhinia* (according to classification of Wunderlin et al., 1987). *Bauhinia miriamae* R. Torres has the calyx spathaceous, five unguiculate and lanceolate petals, and a diadelphous androecium with one perfect stamen and biseriate, connate staminodes. It is related to *B. divaricata* L., differing notably from this species in its pubescence, number of leaf primary veins, the color and other aspects of the floral rachis and flowers, claw petal size, and the shape of the hypanthium and staminodes. Likewise, *B. wunderlinii* R. Torres is also morphologically similar to *B. divaricata*, differing notably from it by its arborescent habit, shape of the leaves and number of primary veins, and size of the calyx, stamens, and

gynoecium. In addition, *B. wunderlinii* has uniseriate staminodes, while *B. divaricata* has biseriate staminodes that differ in shape from *B. wunderlinii*.

***Bauhinia miriamae*** R. Torres, sp. nov. TYPE: Mexico. Oaxaca: Distr. de Tuxtepec, mpio. de San Miguel Soyaltepec, camino al vertedor de La Presa Miguel Alemán (Temascal), 10 Dic. 1993, Rafael Torres C. 14334 (holotype, MEXU; isotypes, ENCB, MEXU, MO, NY, OAX, USF). Figure 1.

Frutex 1–2 m, caulibus juvenibus dense minuteque hirsuto-ferrugineis; folia 7- ad 9-nervia, nervis minute hirsuto-ferrugineis, utrimque villosa, stipulis minute hirsutis. Inflorescentiae rhachidi minute hirsuto-ferrugineo, alabastris et pedicellis rubris, minute hirsutis. Flores pendentes; hypanthium urceolatum, rubrum, minute hirsutum; calyx ruber, minute hirsutus; petala breviunguiculata; staminodia 9, in 2 seriebus: 5 vel 6 per totam longitudinem connata, laminam conduplicatam formantia; 4 vel 3 ad superficiem externam laminae, per 2/3 longitudinem filamentorum affixa; ovarium minute hirsutum vel tomentosum, ferrugineum. Legumen oblanceolatum. A *Bauhinia divaricata* differt indumento minute hirsuto-ferrugineo, nervis foliorum magis numerosis, calyce rubro, floribus pendentibus et staminodiis omnino connatis.

Shrub 1–2 m high, andromonoecious; young branches densely and minutely hirsute-ferruginous, old branches glabrous. Leaves (1.5–)3–10(–13) × (1.4–)2–5(–6.5) cm, apically 2-lobed, bilobed for 1/3 length, lobes divaricate, blade widely ovate, chartaceous, 7- to 9-veined, veins finely hirsute-ferruginous, upper and lower surface villous, apex of lobes acute, base cordate to rounded; stipules (0.9–)1.5–3.2 × 0.2–1.1 mm, lanceolate, minutely hirsute, intrastipular excrescence ca. 1.5 mm, narrowly oblong; petiole (1–)1.5–3.2(–4.1) cm, canaliculate, minutely hirsute to villous-ferruginous. Inflorescences racemose, 10- to 30-flowered, terminal or rarely cauliflorous; rachis minutely hirsute-ferruginous; floral buds ca. 1.5 × ca. 0.4 cm, falcate, red, minutely hirsute; bracts 1–2 (–2.9) × ca. 0.3 mm, linear-lanceolate, minutely hirsute; bracteoles 0.8–1.5 × ca. 0.1 mm, linear, minutely hirsute; pedicels 1–2.5 cm, articulate at apex, red, minutely hirsute, persistent. Perfect

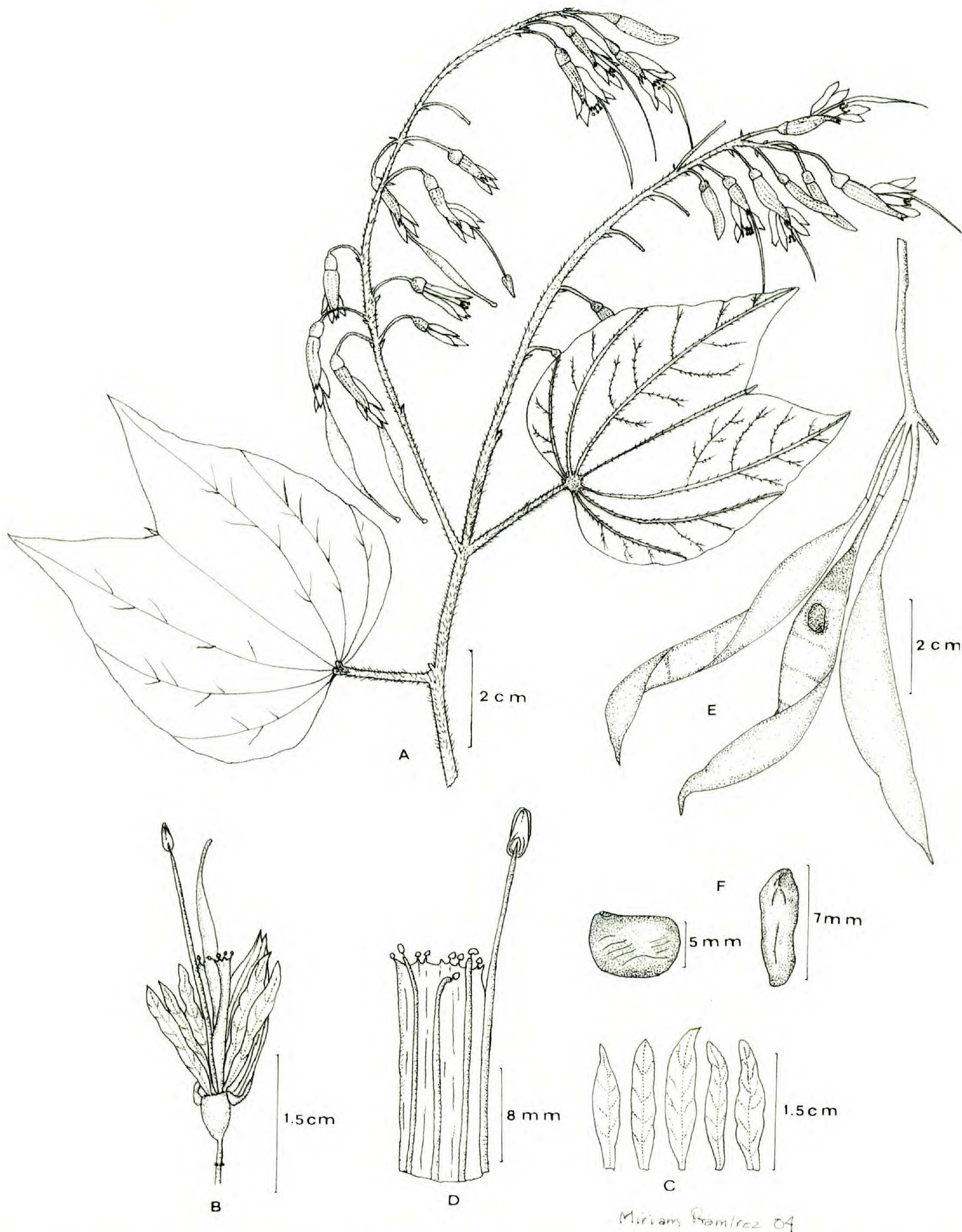


Figure 1. *Bauhinia miriamae* R. Torres. —A. Branch with inflorescences. —B. Hermaphroditic flower. —C. Petals. —D. Androecium with staminodes, dorsal view. —E. Dehiscent legumes. —F. Seed, lateral and ventral view. (A, B, C, D based on Torres 16044, MEXU; E and F based on Torres 10944, MEXU.)

flowers, pendulous; hypanthium 2–4.5 × 1.4–2.7 mm, urceolate, red, minutely hirsute, caducous; calyx 0.8–1.3 × 0.2–0.5 cm, spathaceous at anthesis, with 2 or 3 basal apertures, 5-lobed, red, minutely hirsute, lobes 0.5–1 mm, filiform, minutely hirsute;

petals 5, subequal, 1–2.2 cm, imbricate, white, ruddy with age, lamina 0.8–2 × 0.2–0.5 cm, lanceolate, claw 1–2 mm, glabrous; androecium diadelphous, fertile stamen 1, ca. 3 cm, slightly arcuate, connate almost 1/2 their length with 9 staminodes; anther 3–

Table 1. Data comparing the new species *Bauhinia miriamae* and *B. wunderlinii* with *B. divaricata*.

Characters	<i>B. divaricata</i>	<i>B. miriamae</i>	<i>B. wunderlinii</i>
Habit	Shrub	Shrub	Tree, rarely shrub
Pubescence	Minutely strigose	Minutely hirsute-ferruginous	Minutely strigose
Leaf primary veins	5 to 7	7 to 9	8 to 9
Flower position	Erect	Pendulous	Erect
Hypanthium	Cyathiform	Urceolate	Cyathiform
Calyx length, cm	1–1.5	0.8–1.3	0.6–0.8
Claw petal length, mm	5–8	1–2	3–6
Stamen length, cm	2.9–4.6	ca. 3	1.8–2.4
Staminodes length, cm	1–1.9	1–1.6	0.6–0.8
Staminodes position	Biseriate	Biseriate	Uniseriate
Staminodes connation	2/3 their length	Full-connated	2/3 their length
Gynoecium length, cm	3.7–6.2	2–3	0.7–1.4

4.5 × ca. 1.5 mm, narrowly elliptic; staminodes 1–1.6 × ca. 0.4 cm, biseriate; 5 to 6 fully connated, on conduplicate blade, lobes ca. 0.5 mm, irregularly triangular, 4 or 3 adnate on blade adaxial surface 2/3 their length, staminode anthers poorly developed, persistent; gynoecium 2–3 cm, slightly arcuate, ovary long-stipitate, finely hirsute to tomentose, ferruginous, stigma ca. 0.3 mm diam., clavate, oblique; male flowers similar. Legume 3.5–8.5(–10.1) × ca. 1.5 cm, oblanceolate, sublignous, elastically dehiscent, brown, glabrous to scarcely strigulose, apiculate with persistent style ca. 5 mm, stipe ca. 1.5 cm; seeds 5.5–7.5 × ca. 5.5 mm, elliptic to oblong, dark brown, aril lobes short, hilum subapical.

*Distribution and habitat.* *Bauhinia miriamae* is endemic to Temascal in the Tuxtepec region (basin of Papaloapan river, Oaxaca). The new species occurs in tropical evergreen forest between 50 and 130 m.

*Phenology.* Flowering October–March; fruiting January–June.

*Bauhinia miriamae* is morphologically similar to species of section and series *Bauhinia* and is similar and close to *B. divaricata*. It differs by the minutely hirsute-ferruginous indumentum of almost the entire plant, by the 7 to 9 primary veins on the leaf blades, and the distinctive reddish color on the inflorescences rachis, pedicels, hypanthium, and calyx. The hypanthium is urceolate, its flowers are pendulous, the petals are shortly unguiculate, and the adaxial staminodes always are almost totally connate with persistent and immature anthers on short triangular lobes. *Bauhinia divaricata* has a fine strigose indumentum, 5 to 7 primary veins on the leaf blades, and a greenish color on the inflorescence rachis, pedicels, hypanthium, and calyx. The hypanthium is cyathiform, its flowers are erect, and the petals conspicuously unguiculate. The adaxial staminodes are connate for 2/3 their length, with long-linear lobes, without developed anthers (Table 1).

*Etymology.* This species epithet is dedicated to Miriam P. Ramírez De Anda, biologist and botanical illustrator, for her unlimited support and contribution to the taxonomic study of *Bauhinia* through her various drawings and constructive morphological observations (including those herein illustrated).

*Paratypes.* MEXICO. **Oaxaca:** Distr. Tuxtepec, Mpio. de San Miguel Soyaltepec, 2 km de la Hidroeléctrica al vertedor de La Presa Temascal, *Luis Cortés A. 613*, *R. Torres & M. P. Ramírez* (MEXU), *Luis Cortés A. 1176 & R. Torres* (MEXU); 3 km al S de Temascal, *A. García 2750*, *L. Cortés & M. L. Torres* (MEXU); 2 km al E de Temascal, *E. Martínez 24033 & C. H. Ramos* (MEXU), *C. H. Ramos 400 bis & E. Martínez* (MEXU); Camino al Vertedor, ca. 5 km de la Cortina, 17 oct. 1987, *C. H. Ramos s.n.* (MEXU); Nueva Patria, a 2 km sobre el camino, *O. Téllez 364*, *Ph. Lamy & A. Romo* (MEXU); La Curva del Diablo, camino al Vertedor, 4 km al SE de Temascal, *Rafael Torres C. 9691, 9692 & 9693*, *L. Cortés, M. Sousa & G. Andrade* (MEXU), *Rafael Torres C. 16042, 16043, 16044 & J. C. Montero* (MEXU); 5.7 km al S de Temascal, camino al vertedor, *Rafael Torres C. 10944*, *L. Cortés y E. Martínez* (MEXU).

***Bauhinia wunderlinii*** R. Torres sp. nov. TYPE: Mexico. Veracruz: Mpio. de Minatitlán, 13.7 km al E de La Laguna, terracería a Uxpanapa, luego 6.5–7 km al N sobre camino nuevo (no completo) a Belisario Domínguez (brecha 93), 130 m, 28 Apr. 1982, *Thomas L. Wendt 3905*, *A. Villalobos, I. Navarrete & A. García* (holotype, MEXU; isotypes, CHAPA, TEX). Figure 2.

Arbor 13–20 m alta, raro frutex; folia 8- ad 9-nervia, lobis leviter divergentibus vel convergentibus, lamina late ovata, apice lobis acutis vel apiculatis; calyx 0.6–0.8 cm longus, ca. 0.4 cm latus, spathaceus, flavidus, minute tomentosus, trichomatibus incrassatis, adpressis, brunneo-rubellis; petala unguiculata, 0.7–1.4 cm longa; stamen fertile, 1.8–2.4 cm longum; staminodia 9, uniseriata, 0.6–0.8 cm longa, 0.2–0.4 cm lata, per 2/3 longitudinem connata, carnosae, pilosae, conduplicate, tubum formantia; gynoecium 0.7–1.4 cm longum, ovario vix minute tomentoso. A *Bauhinia divaricata* differt habito arboreo, nervis foliorum magis numerosis, lobis

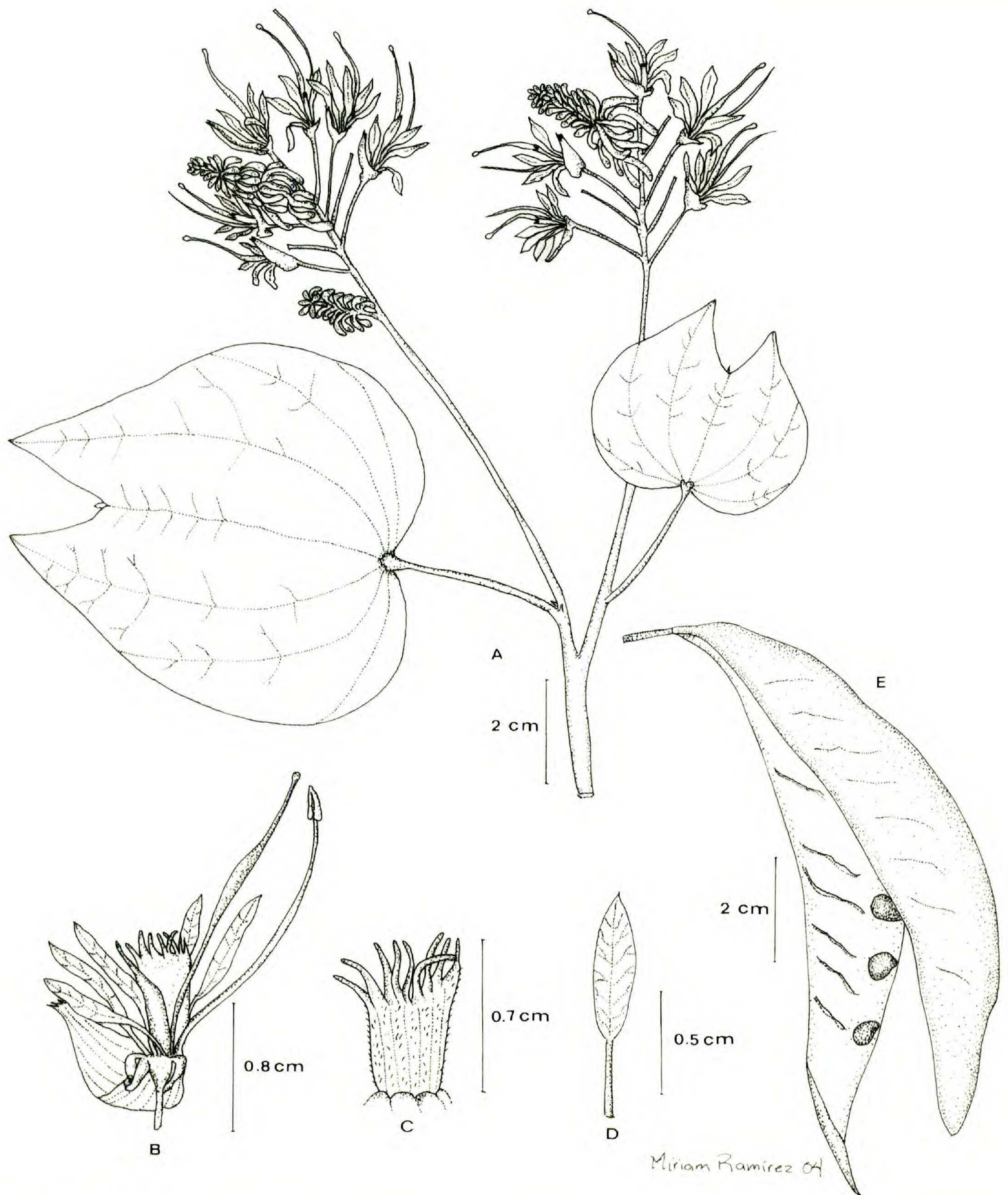


Figure 2. *Bauhinia wunderlinii* R. Torres. —A. Branch with inflorescences. —B. Hermaphroditic flower. —C. Stamines, dorsal view. —D. Petal. —E. Dehiscent legume with immature seeds. (A based on *Whitefoord* 9532, MEXU, fewer flowers were drawn; B, C, and D based on *Davidse* 34360, MEXU; E based on *Hernández* 3242, MEXU.)

foliorum parallelis vel convergentibus, calyce brevior et staminodiis uniseriatis.

Tree 13–20 m high, rarely shrubs, young branches minutely strigose, old branches glabrous to minutely strigose. Leaves (7.1–)10–12.4 × (4.5–)6.4–9(–10.3) cm, apically 2-lobed, bilobate for 1/3 length, lobes slightly divergent or convergent, blade widely ovate, chartaceous, 8- to 9-veined, upper and lower surface

glabrous, apex of lobes acute to apiculate, base truncate to cordate; stipules ca. 1.5 × ca. 1 mm, triangular, minutely strigose, intrastipular excrescence ca. 1 mm, lanceolate; petioles 2–4 cm, slightly canaliculate, glabrous to minutely strigose. Inflorescences racemose, with more than 50 flowers congested distally (strobilus-like), terminal and subterminal; rachis minutely strigose, brown to greenish brown;

floral buds 0.7–1 × ca. 0.3 cm, green to yellowish green, minutely tomentose, with thickened-adpressed, brown to reddish brown trichomes; bracts (0.5–) 1–2 × 0.5–1 mm, triangular to lanceolate, minutely strigose; bracteoles 0.5–1.2 × ca. 0.5 mm, triangular to lanceolate, minutely strigose; pedicels 0.9–1.3 cm, articulate in the apex, yellowish green, minutely strigulose, persistent. Perfect flowers, erect; hypanthium 3–3.5(–4) × 1–1.5 mm, cyathiform, yellowish green, minutely strigose; calyx 0.6–0.8 × ca. 0.4 cm, spathaceous at anthesis, yellowish green, minutely tomentose, with thickened-adpressed, brown to reddish brown trichomes, inconspicuously 5-lobed, lobes 0.1–0.8 mm, triangular; petals 5, 0.7–1.4 cm, white at anthesis, slightly pink in age, conspicuously unguiculate, claw 3–6 mm, glabrous, blade 0.4–0.8 × ca. 0.2 cm, lanceolate, glabrous; androecium diadelphous, fertile stamen 1, 1.8–2.4 cm, straight, connate almost in the base with 9 staminodes; anthers ca. 3 × ca. 1.2 mm, lanceolate, glabrous; staminodes 0.6–0.8 × 0.2–0.4 cm, uniseriate, connate for 2/3 length, on conduplicate blade, fleshy, pilose, lobes 1–2 mm, triangular to linear, staminode anther not developed, caducous; gynoecium 0.7–1.4 cm, slightly arcuate, ovary long-stipitate, minutely hirsute to minutely tomentose, stigma ca. 0.4 mm diam., capitate; male flowers similar. Legume (immature) ca. 12 × ca. 2 cm, narrowly oblong, sublignous, dehiscent, brown, glabrous to minutely strigose; stipe ca. 1 cm, rostrum ca. 3 mm; mature seeds not seen.

*Distribution and habitat.* *Bauhinia wunderlinii* is restricted in Mesoamerica with distribution in Chiapas, Veracruz, Belize, and Honduras, occurring in tropical ombrophilous forests or tropical evergreen forest between 130 and 610 m.

*Phenology.* Flowering April–June; fruiting July.

*Bauhinia wunderlinii* is morphologically similar to *B. divaricata* by having racemose inflorescences with more than 50 flowers, with five white petals (slightly pink at maturity) with blades lanceolate and conspicuously unguiculate; the androecium is diadelphous with one stamen perfect and nine connate staminodes on a conduplicate blade. *Bauhinia wunderlinii* may be distinguished from *B. divaricata* by its leaves widely

ovate with lobes slightly divergent to convergent and 8- to 9-nerved, calyx shorter and finely tomentose, and shorter fertile stamen and gynoecium. Also, the staminodes are shorter, uniseriate, and connate for 2/3 their length with short triangular-linear lobes. In *B. divaricata* the leaves are ovate to lanceolate with lobes divaricate and 5- to 7-nerved, and the calyx (1–1.5 cm, minutely strigose), petals (1.5–2.5 cm), fertile stamen (2.9–4.6 cm), gynoecium (3.7–6.2 cm), and staminodes (1–1.9 cm) are longer. The staminodes are biseriate, and six are connate for 2/3 their length, like a conduplicate blade with long linear lobes; three are adnate to the adaxial surface of the conduplicate blade for 1/2 their length (Table 1).

*Etymology.* This species is named in honor of Richard P. Wunderlin, who has made an important contribution to the taxonomy of *Bauhinia*, particularly in the reorganization of the tribe Cercideae.

*Paratypes.* BELIZE. Cayo Distr., Millinario to Las Cuevas road, *C. Whitefoord* 9532 (MEXU). HONDURAS. **Comayagua:** Lago Yojoa, southern end of Lago Yojoa, *Davidse* 34360 (MEXU, MO). MEXICO. **Chiapas:** Mpio. de Ocozocoautla de Espinosa, Res. Selva El Ocote; est. El Encajonado, 1.5 km al E del campamento, *H. Hernández H.* 3242 & *A. Bolom* (MEXU).

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